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ABSTRACT

A study examined the verbal (Chinese and English) self-concepts of 274 university students in Hong Kong 3 months after the end of the colonial era. The students' self-concepts in Chinese, their native language (L1), and in English, a second language (L2), were measured by two domain-specific academic self-concept scales, and were found to be two distinct constructs. The data were then tested against an internal/external frame of reference model of self-concept development that has served as a possible explanation of self-concept formation in verbal and math domains but has not been tested in the bilingual education context where the medium of instruction is the L2. Structural equation models relating Chinese and English achievement to Chinese and English self-concepts partly replicated the model. The paths leading from prior achievement to subsequent self-concept in matching language domains were positive and significant, indicating a strong external comparison with other students in forming self-concepts. However, the paths leading from prior achievement to subsequent self-concept in non-matching domains were negative, indicating that higher prior English achievement had a significant negative impact on formation of L1 self-concept. Implications are discussed. Contains 20 references. (Author/MSE)

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The Verbal Academic Self-Concept Structure of University Students In A Colonial Population

ED 431 332

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Abstract

This study examined the verbal (Chinese and English) self-concepts of 274 university students in Hong Kong 3 months after the colonial era. These students' self-concepts in Chinese, their first language (L1), and English, a second language (L2) were found to be 2 distinct constructs. The data were tested against Marsh's (1986) internal/external frame of reference model of self-concept development that served as a possible explanation of self-concept formation in verbal and math domains, and has not been tested in the context of bilingual higher education where the dominating medium of instruction is an L2. Structural equation models relating Chinese and English achievement to Chinese and English self-concepts partly replicated Marsh's model. The paths leading from prior achievement to subsequent self-concept in matching language domains were positive and significant, indicating a strong external comparison with other students in forming respective self-concepts; whereas the paths leading from prior achievement to subsequent concept in nonmatching language domains were negative, indicating that higher prior English achievement had a significant negative impact on the formation of the students' self-concept in L1. The complexity of the internal comparisons of these students' L1 and the colonial language may be explained in terms of the importance they accredited to the respective languages. Students' achievement in the L2 that is more significant in the colonial educational system seemed to have a more negative impact on their L1 self-concept whereas their achievement in L1 did not exhibit a similar impact.

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Ivy Cheuk-yin Lau

With a growing body of literature on the study of self-concept in the last two decades, the construct is now better understood and measured as a multidimensional construct instead of the traditional global composite. Shavelson, Hubner, and Stanton (1976) proposed a hierarchical, multidimensional model of self-concept that posited a general (global) self-concept at the apex under which were academic and nonacademic self-concepts which were further divided into domain specific areas such as verbal and math self-concepts. Subsequent research focusing on the multidimensional nature of academic self-concept well supported this domain specificity (e.g., Byrne, 1984; Marsh, 1993; Marsh, Byrne, & Shavelson, 1988; Marsh & Yeung, 1997). However, studies repeatedly found a surprisingly nonpositive relationship between the verbal and math self-concepts (e.g., Marsh, 1986; Marsh, Byrne, & Shavelson, 1988). Thus, the verbal and math self-concepts could not be combined to form a higher order academic self-concept factor. To provide a possible explanation for this nonpositive relationship, Marsh (1986) introduced an internal/external frame of reference (I/E) model suggesting that students tend to compare themselves with others (external frame of reference) and also compare their own performance in different subject domains (internal frame of reference). According to the model, the positive effects of prior achievement on subsequent self-concept development in matching subject domains tend to be balanced out by the negative effects due to an internal comparison between different domains. Several studies have replicated the I/E model in different settings (e.g., Skaalvik & Rankin, 1995) but little work has been done with students of higher education.

According to the I/E model, students are subjected to an external as well an internal frame of reference and, therefore, their respective math and verbal self-concepts are influenced both by external and internal comparisons. The external frame of reference refers to the comparison between the student's perceived academic ability and the abilities of other students in a given environment (e.g., the academic institution, peers). The internal frame of reference refers to the student's comparison of perceived ability in one subject domain with perceived ability in another subject domain. Hence, a student with a comparatively lower math achievement among the peer group may have a significantly lower math self-concept due to the external comparison, but may have a relatively higher math self-concept than English self-concept if English, instead of math, is the student's lower performance in school.

Using a CFA approach to testing the I/E model, Marsh (1986) demonstrated a positive effect of math achievement on math self-concept and a positive effect of verbal achievement on verbal self-concept, but a negative effect of math achievement on Verbal self-concept and a negative effect of verbal achievement on verbal self-concept. Subsequent studies on the I/E model

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based on the English version of the SDQ have been very supportive of these findings (e.g., Byrne & Shavelson, 1987; Marsh, Byrne, & Shavelson, 1988). Furthermore, apart from Marsh's Australian sample, studies of the I/E model conducted in countries such as Norway (Skaalvik & Rankin, 1995), Spain (Gonzalez-Pienda, Nunez-Perez, & Valle-Arias, 1992) and North America (Tay, Licht, & Tate, 1995) also supported the generalizability of the model.

A number of studies have also demonstrated the generalizability of the I/E model irrespective of the instrument used. For example Marsh , Byrne, & Shavelson (1988) found consistent support for the I/E model when using different instruments such as the Self Description Questionnaire, Affective Perception Inventory, Self-esteem Scale, and the Self-concept of Ability Scale as well as the combined self-concept scores. Tay, Licht, and Tate (1995) found patterns that were highly consistent with the I/E model using the Academic Perception Questionnaire. Similarly, the I/E model was also supported in the Skaalvik and Rankin (1995) study in which measures of self-concept, self-perceived aptitude, and self-perceived ability to learn were combined into single math and verbal latent variables.

To educational researchers and teachers, the intricate relationship between academic achievement and academic self-concept has always been a critical concern. The I/E model explains, at least partly, the formation of academic self-concept and the relationship between academic self-concept and academic achievement from a multidimensional perspective. In an attempt to extend the traditional I/E model, this study introduces a third, and perhaps equally salient, academic domain in the I/E comparison -- the Verbal Chinese self-concept (the first language but not necessarily the language of instruction at schools and universities for the higher education students in a Hong Kong sample). The introduction of a third academic construct has the potential of adding new dimensions in the understanding of the I/E model in a given academic environment. To date, this is also the first attempt in introducing an alternate verbal domain in the I/E model administered to a group of bilingual higher education students in a non-western culture.

Method

Participants

The participants of this study were 321 students from a higher education institution in Hong Kong. Students came from different disciplines of study enrolling in either degree and higher diploma courses. The survey was done in English communication classes which were made compulsory to all the participants. Age of the students varied from 17-28. Of all the 321 questionnaires that were completed and returned, only 274 could be used in the analysis due to missing data of some kind.

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Materials

The Academic Self-Concept Measures. Two domain-specific academic self-concept scales: English and Chinese were adapted from Marsh's (1990) Academic Self Description Questionnaire (ASDQ). Each construct comprised of 6 items using an 8-point response scale (1=definitely false to 8=definitely true). These items were scored such that high scores represented favorable responses.

Achievement Scores. There were two achievement indicators in both English and Chinese domains. All these indicators were scores gained in two public examinations in the country over the span of two years in the senior high school prior to entry to higher education studies, and were the basis for universities and colleges in their selection for students.

Statistical Analyses

We first conducted an exploratory factor analysis (EFA) for the English and Chinese academic self-concept constructs based on the 12 variables pertaining to these respective constructs in the design of Marsh's ASDQ. Results of EFA clearly identified the two factors. Subsequent analyses were conducted with item pair scores in confirmatory factor analysis (CFA). In the Model, the three item pairs of the 2 constructs (English and Chinese) and four achievement indicators produced a 10 x 10 covariance matrix on which the CFAs were based (see Table 2). The workings of the CFA and the use of item pairs were best explained and described in Bollen (1989; also see Byrne, 1989; Joreskog & Sorbom, 1993; Marsh, 1994; Marsh & O'Neil, 1984) and are not further discussed in this paper. The SPSS version of LISREL (Joreskog & Sorbom, 1988) was used to explore the a priori models considered here. Also, taking the suggestions of Marsh, Balla, and McDonald (1988) and Marsh, Balla and Hau (1996), the Tucker-Lewis index (TLI) was used as the primary, critical index for model fit in the present study. We first examined the reliabilities of constructs and how well the measured variables were represented by each construct. Then we tested Marsh's (1986) I/E model of self-concept development that is represented in Figure 1.

Results and Discussion

Preliminary Analysis

Reliability estimates for the English and Chinese academic self-concept scales were high (alphas = .95, .91 respectively). Results of the EFA yielded the two distinct factors with factor loadings ranging from .69 to .93, the weakest being the negative item in the scale (I am hopeless when it comes to 'subject area'). Subsequent tests of the I/E model were based on these a priori constructs. Table 1 shows the goodness of fit summary and Tables 2 shows the CFA solution of the model considered in the present context.

Table 1

Goodness of Fit Summary for the English & Chinese I/E Model

Model	χ^2	df	RNI	TLI	GFI
Null	4778.30	36			
English & Chinese	58.89	26	.993	.990	.960

Note: N = 274. RNI= Relative noncentrality index. TLI= Tucker-Lewis index. GFI= Goodness-of-fit index.

Table 2 (English & Chinese)

CFA Solution for English and Chinese I/E Model

	Mean	SD	Factor Loadings				Uniq	Correlations between measured variables									
			ENGAc	CHINAc	ENG	CHIN		1	2	3	4	5	6	7	8	9	10
English Achievement																	
1 ENGAc1	7.03	1.74	84*	0	0	0	29*	--									
2 ENGAc2	7.99	1.81	81*	0	0	0	35*	68	--								
Chinese Achievement																	
3 CHINAc1	8.54	1.96	0	74*	0	0	45*	15	05	--							
4 ChinAc2	6.65	1.81	0	59*	0	0	66*	09	17	43	--						
English Self-concept																	
5 ENG1	5.29	1.38	0	0	87*	0	24*	57	56	04	07	--					
6 ENG2	4.68	1.46	0	0	95*	0	09*	57	58	01	02	83	--				
7 ENG3	4.72	1.45	0	0	98*	0	05*	60	59	08	04	85	93	--			
Chinese Self-concept																	
8 CHIN1	4.91	1.51	0	0	0	85*	28*	-04	-04	48	40	18	06	13	--		
9 Chin2	4.70	1.56	0	0	0	93*	14*	-14	-18	51	38	01	-01	02	80	--	
10 CHIN3	4.69	1.42	0	0	0	93*	14*	-07	-08	54	43	14	10	14	78	86	--
Path Coefficients																	
English self			75*	-07													
Chinese self			-23*	81*													
Correlations between constructs																	
EngAc			--														
ChinAc			18*	--													
English self			73*	07	--												
Chinese self			-13*	76*	-08	--											
Residuals and correlated residuals																	
EngAc			1														
ChinAc			-18*	1													
English self			0	0	46*												
Chinese self			0	0	23*	35*											

Note. N = 274. The four constructs were English Achievement (ENGAc) derived from two indicators (1 and 2), Chinese Achievement (CHINAc1, CHINAc2), English self-concept (ENG), and Chinese self-concept (CHIN). The self-concept scales were inferred from 3 item pairs (1 to 3) each for ENG and CHINESE. Uniq = uniqueness. Parameter estimates and item correlations range from 0 to 1 but are presented without decimal points. Values of 0 or 1 were fixed in the definition of the model. * $p < .05$

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The English-Chinese I/E Paths

This model tested the applicability of the I/E theory using the English and Chinese ASDQ responses and their matching achievements. Paths between latent variables were posited in Figure 1. This model converged to a proper solution with a good fit (RNI=.993, TLI=.990). Both paths of external comparison were positive and significant (βs = .75 and .81, respectively for English achievement to English self-concept and Chinese achievement to Chinese self-concept), as predicted by the I/E model; while English achievement had a substantial negative and significant effect on Chinese self-concept in the internal comparison (β = -.28), the path leading from Chinese achievement to English self-concept was much smaller in magnitude and was statistically nonsignificant (β = -.07). Hence, similar to the English-math paths found in previous studies on the I/E theory, both paths between nonmatching domains were negative, but unlike what was typically found in previous studies on English and math, the path from Chinese achievement to English self-concept was relatively much smaller. Thus the English-Chinese paths considered in the present analysis supported an I/E tendency. The paths leading from English achievement to English self-concept and to Chinese self-concept supported the traditional I/E model but showed only partial support for paths leading from Chinese achievement. Essentially, there was primary support for the external comparisons described in the I/E theory and also internal comparison based on English achievement but rather weak and nonsignificant internal comparison based on Chinese achievement.

For the present Hong Kong sample, English is clearly the verbal domain in an educational setting because English has been adopted as the language of instruction at schools and higher education for over one hundred years. Chinese, on the other hand, is the first language of these students. The differential relations of these two languages with math achievement and self-concept found in the present study have interesting implications. When a less salient "academic" domain, such as Chinese was considered (remembering that Chinese was not a requisite for entering university for this sample), despite being the first language, the students were less inclined to compare internally with English that was the major language of instruction, although the external comparison was still distinct. This result has helped to unfold, in part, the development of self-concept among these students of higher education in a given academic setting under a colonial regime. When two salient domains, such as English and math, are considered in the I/E comparisons, students' self-concepts are likely to be subjected to both external comparison of the same curriculum area with the environment (e.g. peers) as well as their own internal comparison with a different curriculum area. On the contrary, when a comparatively less salient verbal domain,

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Chinese in this case, is considered in the I/E comparisons with the math domain, while the external comparison with other students in the same curriculum is still substantial, students are less inclined to compare their two subject areas internally. That also seems to imply that the achievement in a less salient subject domain has little or no influence over the self-concept of a nonmatching domain. This study has extended previous research in examining the applicability of the I/E model to bilingual higher education students and, more importantly, contributes to the knowledge concerning the relationships among self-concepts of different subject domains in a given academic environment under colonial rule.

Summary

The present study examines the applicability of the internal/external frame of reference in the self-concept development of higher education students. The analysis showed the strength of the Marsh (1986) I/E model in describing the development of higher education students' self-concepts and its generalizability to a non-western culture. However, the I/E comparisons may exist only when the domains are considered to be salient sources of feedback for the development of self-concept in a given academic setting. Thus, similar to high school students, the development of higher education students' self-concepts in domain-specific curriculum areas is also based on social comparisons with other students in the same curriculum area. However, internal comparison of individual student's own competence in various curriculum areas may occur only when both sources of competence feedback are salient in the academic setting.

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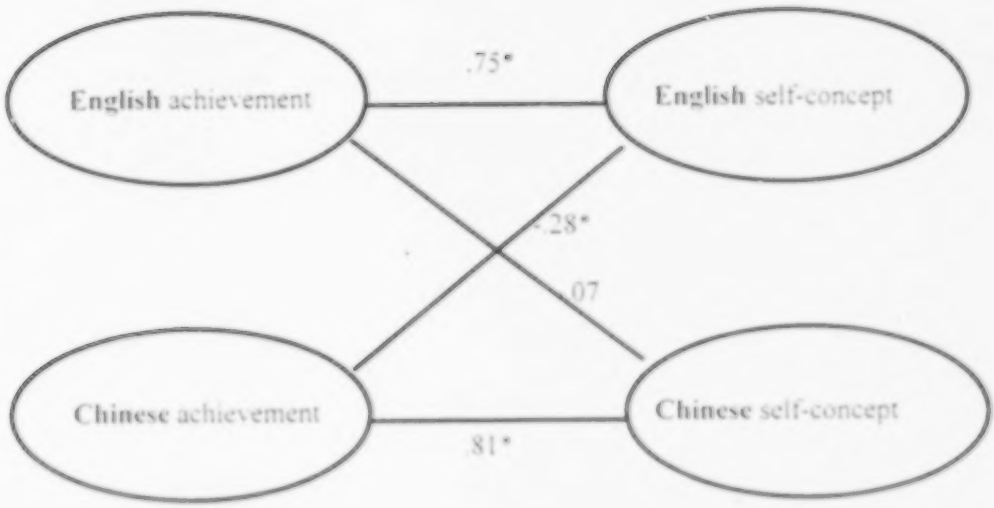

Figure 1. Structural models testing Marsh's (1986) I/E model with English and Chinese achievement scores and their respective self-concepts.

Marsh's (1990) Academic Self-Description Questionnaire (ASDQ) was the instrument adopted in the present study to measure a range of domain-specific academic self-concepts. ASDQ II is designed for use with students from adolescents to early adults. The items on the original ASDQ II are structured on a 6-point Likert-type scale format, with 6 items (variables) constituting each subscale. For the purpose of the present study, an 8-point Likert scale was adopted after having considered the maturity of the students in their ability to make relatively more discriminative responses. The phrasing of the item stems in each subscale is identical, with only the name of the subject area being changed. Therefore the 12 items(variables) considered in the present investigation are as follows:

'Compared to other students I'm good at [English]'
'I'm hopeless when it comes to [English]'
'I have always done well in [English]'
Work in [English] is easy for me'
'I get good marks in [English]'
'I learn things quickly in [English]'

'Compared to other students I'm good at [Chinese]'
'I'm hopeless when it comes to [Chinese]'
'I have always done well in [Chinese]'
Work in [Chinese] is easy for me'
'I get good marks in [Chinese]'
'I learn things quickly in [Chinese]'